

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

In the Matter of)

Preparation for International)
Telecommunication Union World)
Radiocommunication Conferences)

IC Docket No. 94-31

**COMMENTS OF HUGHES SPACE AND COMMUNICATIONS COMPANY
AND HUGHES COMMUNICATIONS GALAXY, INC.**

Hughes Space and Communications Company ("HSC"), a unit of Hughes Aircraft Company ("HAC"), and Hughes Communications Galaxy, Inc. ("HCG") (collectively, "Hughes") submit these comments in response to the Notice of Inquiry ("NOI") referenced above relating to the next and future World Radiocommunication Conferences ("WRCs"). In these comments, Hughes identifies a number of issues relating to WRC-95 that directly impact on the United States satellite industry. Hughes offers its initial recommendations about what the Commission should consider in shaping the United States' proposals with respect to these issues.

I. Introduction

HSC and HCG are leading companies in the field of satellite communications. HSC is a preeminent manufacturer of communications satellites that provide a wide range of commercial and military services, both domestic and international. Over 100 HAC

HP

communications satellites have been launched to date, approximately 50 are now in service, and 25 are expected to be launched in the next two years.

HCG and its affiliates operate the largest fleet of domestic communications satellites: the in-orbit Galaxy I-R, III, V-W, and VI C band satellites; the in-orbit SBS-4, SBS-5 and SBS-6 Ku band satellites; and the in-orbit hybrid (combined C and Ku band) Galaxy IV(H) and VII(H) satellites. An HCG affiliate operates the fleet of Leasat satellites that provides essential worldwide communications services to the United States Navy.

Within the last year, HCG and its affiliate, DIRECTV, Inc., have launched and begun operation of a high power direct broadcast satellite that provides (along with the United States Satellite Broadcasting Company) the first high-power DBS service in the United States. A second DBS satellite is scheduled for launch within the next two weeks. HCG is the largest shareholder in AMSC, the permittee for a geostationary MSS satellite that will provide services in the United States. In addition, HCG is an applicant for a Ka band "Spaceway" satellite system that will bring essential telecommunications services to underserved areas.

More recently, HCG has begun to become directly involved in international satellite services. On April 25, 1994, HCG filed an application for modification of its to-be-launched Galaxy III(H) satellite to provide certain international services. Today, HCG has filed for authority to construct, launch and operate a separate international fixed-service communications satellite system, to be known as Galaxy VIII(I), which will provide state-of-the-art satellite services at 13.75-14.0 GHz and 11.45-11.70 GHz. In its application, HCG has proposed to use the 13.75-14.0 GHz band for space-to-earth operations consistent with

the WARC-92 Final Acts, which allocated this band to primary fixed satellite service subject to certain technical requirements.^{1/} The technical requirements imposed on this band are on the agenda for WRC-95.^{2/} Thus, as discussed in more detail below, Hughes is particularly concerned that the United States proposal support FSS use in the 13.75-14.0 GHz band.

The guiding principal for the Commission in developing United States proposals relating to the WRC-95 agenda should be the promotion of an internationally competitive United States satellite industry. Thus, Hughes submits the following comments in response to various issues relating to the Agenda for WRC-95.

II. Space Services

WARC-92 made a primary allocation for FSS in the 13.75-14.0 GHz band. To help correct the current imbalance that exists in spectrum available for FSS uplink and downlink operations, WARC-92 allocated this band on a primary basis to FSS uplink operations. Hughes urges the Commission to support FSS in the 13.75-14.0 GHz band.

The 13.75-14.0 GHz band is a natural expansion band for FSS systems. Other administrations are in the process of registering international systems that will use this band for uplink operations.^{3/} It is critical to the competitiveness of the United States satellite industry, both at home and abroad, that the Commission adopt a position that supports primary FSS in the 13.75-14.0 GHz band.

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1. The technical requirements are in footnotes 855A and 855B.
 2. See NOI at ¶ 29.
 3. The ITU's Space Network List indicates that there are over one hundred satellite systems world-wide that propose to use the 13.75-14.0 GHz band, some of which are at locations particularly suited to serving the United States.

The 13.75-14.0 GHz band is also allocated internationally on a co-primary basis for radiolocation services and on a secondary basis for the space research, Earth exploration-satellite, and standard frequency and time signal-satellite services. Recognizing the difficulties encountered in sharing spectrum, WARC-92 also added to the international Radio Regulations footnote No. 855A, which specifies technical criteria necessary for the co-primary services to share this band, and footnote No. 855B, which deals with geostationary and non-geostationary space stations in space research service.^{4/} Resolution No. 112 (WARC-92) called for the criteria in footnote Nos. 855A and 855B to be studied, particularly with regard to compatibility between FSS and secondary allocations in the 13.75-14.0 GHz band.^{5/} ITU-R Task Groups 4/4 and 7/3 have completed the studies called for and have concluded that the criteria in footnote Nos. 855A and 855B are appropriate.^{6/}

Hughes fully supports the criteria in footnotes 855A and 855B and notes that its plans for Galaxy VIII(I) described above are compatible with these technical requirements. Thus, Hughes recommends that the Commission support the WARC-92 allocation of this band to FSS, as well as the conclusions of the ITU-R Task Groups that the criteria imposed by footnotes 855A and 855B are appropriate.

III. Review of the Final Report of the Voluntary Group of Experts

The recommended agenda for WRC-95 includes a review of the Report of the Voluntary Group of Experts ("VGE") regarding simplifying and revising the ITU's Radio

4. NOI at ¶ 29.

5. Id.

6. Id.

Regulations. Because the VGE's recommendations will directly impact the competitive position of United States satellite manufacturers and operators, Hughes is concerned that the Commission fully consider how to protect the rights of United States industry with respect to geostationary and non-geostationary mobile satellite services ("MSS") and fixed satellite services ("FSS").

While the VGE's recommendations should not be the primary focus of WRC-95, Hughes believes that the Commission should carefully examine those recommendations. Hughes understands that the both the NTIA and the Commission's Industry Advisory Committee on WRC-95 are in the process of evaluating the VGE's recommendations. Ultimately, the Commission with NTIA and the Department of State must take steps and formulate policy to ensure that the rights of United States industry are not diminished or compromised in any way with respect to spectrum allocation, procedural matters, and other issues affected by the proposed revisions to the international Radio Regulations.

Hughes' suggestions for dealing with three specific VGE recommendations are given below in Section V.

IV. Mobile Satellite Services

A. Date of Entry into Force of 2 GHz Allocations

Agenda item 2.1(b) concerns a review of the date of entry into force of MSS allocations in the 1980-2010 MHz and 2170-2200 MHz bands in Regions 1 and 3, and of MSS allocations in the 1970-2010 MHz and 2160-220 MHz bands in Region 2. At WARC-92, the United States stated its requirement that MSS be permitted in these bands starting

after 1995.^{7/} Other counties supported a position which would not allow service until 2005. To promote the competitive position of United States interests with respect to MSS, Hughes supports early entry into force of these allocations. Delayed entry into force of these allocations in the United States could affect the status of United States satellite systems vis-a-vis those of other administrations.

B. Feeder Links

Hughes recognizes that it is important for the WRC to resolve the issues regarding allocations and regulatory aspects of MSS feeder links. However, with respect to proposals to utilize certain Ka band frequencies for feeder links, Hughes emphasizes that other vital satellite interests must be taken into account. The issue of Ka band use for MSS feeder links will be explored in the Commission's soon-to-be-commenced Ka band Negotiated Rulemaking Proceeding.^{8/} The results of that proceeding must, of course, be reconciled and harmonized with the Commission's preparations for WRC-95.

Hughes believes that the primary status of GSO services with respect to non-GSO services should be maintained as established by Radio Regulation 2613 in the FSS allocations. While non-GSO systems have many significant and desirable attributes which favor their implementation, a major disadvantage is their inability to utilize frequency reuse to the extent possible with GSO systems. This important feature and the important principle that the radio spectrum be assigned with maximum efficiency warrants constraining the

7. See NOI at ¶ 21.

8. See FCC Public Notice of July 12, 1994, "The Federal Communications Commission Establishes a Negotiated Rulemaking Proceeding Under the Federal Advisory Committee Act for the Development of Technical Rules in CC Docket No. 92-297."

operational characteristics of non-GSO systems and their proliferation in the bands which are assigned to GSO satellites. Furthermore, this consideration is appropriate because of the dynamic nature of non-GSO systems and their associated operational conditions which are difficult if not impossible to be included in the GSO. In the absence of any demonstrated compatibility the only reasonable solution may be the adoption of allocations specific to non-GSO use and their feeder links.

V. Appendices 30 and 30A

Decisions at WRC-95 affecting Appendices 30 and 30A are called for under both agenda items 1 and 3a. Under agenda item 1, WRC-95 must consider three Recommendations (Rec. Nos. 2/3, 2/5, and 2/6) which, though not intended to alter the substance of the Appendices would dramatically change their format and contents. Hughes is supportive of the objectives of the VGE Recommendations and recognizes the considerable effort that went into demonstrating how they could be applied in practice. However, based on its initial examination of these Recommendations, Hughes questions the desirability of adopting them, at least during WRC-95, for the following reasons:

- The changes would eliminate the Plans for BSS and their feeder links from the Radio Regulations and disperse related provisions and procedures to different parts of the Radio Regulations. It is not obvious that this arrangement is as simple or useful as maintaining all of the relevant material in a single appendix unless the same set of procedures could serve several plans.
- Of the five sets of Plans in the Radio Regulations (in Appendices 25, 26, 27, 30/30A, and 30B), however, the VGE Recommendations would affect only two (25 and 30/30A). Of these, it is understood that there is substantial opposition from the users of the Appendix 25 Plan. If this opposition is sustained by WRC-95, the VGE recommendations would affect only the BSS/feeder link plans.

- Even if there were compelling advantages to applying the VGE Recommendations only to Appendices 30 and 30A, it would appear premature to do so at WRC-95 since this conference will be considering major revisions to the Plans and associated procedures of Appendices 30 and 30A under agenda item 3a. The simplified procedures might better be used as a model for consideration in the revision of the Appendices at WRC-97.

WRC-95 agenda item 3a calls for a consideration of revisions to Appendices 30 and 30A for Regions 1 and 3 under the terms of WARC-92 Resolution 524. Hughes is concerned that the conditions for protecting the integrity of the Region 2 Plan cited in Resolves 2 of Resolution 524 may not be sufficient to protect United States systems implemented under the "interim system" procedures of Resolution 42 of the Radio Regulations.

In assessing the impact of revising the Regions 1 and 3 Plans and the associated inter-Regional sharing criteria, it is critical that the United States take into account that its BSS systems differ in important ways from those described in the Region 2 Plan.^{9/} These differences make current, and possible future, U.S. BSS systems significantly more vulnerable to interference from BSS and FSS systems in Regions 1 and 3 than the existing Region 2 plan assignments would be. Until and unless the United States obtains permanent modifications to the Region 2 Plan under Article 4 of Appendices 30 and 30A, Regions 1 and 3 will not be obligated to provide the inter-Regional interference protection that U.S. BSS systems require. Thus, any examination of the impact on Region 2 of the proposed revisions

9. With the implemented systems, service areas are larger, satellite eirps are lower, earth station receiving antennas are smaller, receiver noise temperatures are lower, and modulation is digital rather than analog.

to Regions 1 and 3 Plans and sharing criteria should be based on the assumption that the United States assignments in the Plan have been permanently modified to reflect the characteristics of the systems actually launched or under construction by United States permittees.

To protect the integrity of the Region 2 Plan as implemented, the United States must not only participate actively in the technical preparatory work of ITU-R Working Party 10-11S and the Conference Preparatory Meeting for WRC-95, but also should play a proactive role in the consideration of agenda item 3a at WRC-95. However, Hughes cautions that the United States should not limit itself to a purely defensive strategy to ensure the protection of United States systems in the Region 2 Plan. The United States should recognize that as a major supplier to the world of satellite and earth station hardware and technology, it also has a vital stake in increasing the capacity and flexibility of the BSS allocations in Regions 1 and 3, especially for the accommodation of multiservice (BSS/FSS) regional systems.

In connection with inter-Regional sharing criteria, the Commission has asked whether these criteria might be modified on a reciprocal basis with Region 2. Our provisional answer, subject to the examination of concrete proposals, is that such reciprocity would be desirable and should be pursued actively.

Finally, the Commission asked about the implications for the U.S. of taking into account the orbital arcs of Appendix 30B when revising the Regions 1 and 3 Plans. Our preliminary view here is that, subject to appropriate inter-Regional sharing criteria, the

impact on Region 2 would be negligible, and would lead to mutually desirable improvements in the practical usefulness of the revised Regions 1 and 3 Plan.

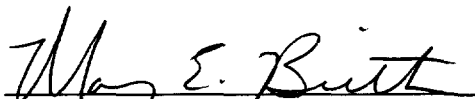
In its preparations for WRC-95, consideration of item 3a appears not to have been explicitly assigned to any of the Informal Working Groups (IWG) of the Industry Advisory Committee. It is recommended that this item be assigned to IWG 1 on Regulatory Issues, for consideration along with the VGE recommendations for the revision of Appendices 30 and 30A. The technical aspects of item 3a might also be assigned to IWG 5 on Space Services.

VI. Conclusion

Hughes respectfully requests that the Commission consider the comments set forth above in developing United States proposals relating to issues on the agenda of WRC-95.

Respectfully submitted,

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